

What is claimed is:

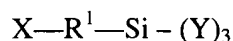
1. A chemical composition comprising:

(a) a first component comprising one or more urethane comprising the reaction product of:

(1) one or more polyfunctional isocyanate compounds;

(2) one or more hydrophilic polyoxyalkylene compounds;

(3) one or more silane compounds of the formula:



wherein

X is $-NH_2$; $-SH$; $-OH$; $-N=C=O$; or $-NRH$ where R is selected from the group consisting of phenyl, straight and branched aliphatic, alicyclic, and aliphatic ester groups; R^1 is an alkylene, heteroalkylene, aralkylene, or heteroaralkylene group; and

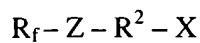
each Y is independently a hydroxyl; a hydrolyzable moiety selected from the group consisting of alkoxy, acyloxy, heteroalkoxy, heteroacyloxy, halo, and oxime; or a non-hydrolyzable moiety selected from the group consisting of phenyl, alicyclic, straight-chain aliphatic, and branched-chain aliphatic, wherein at least one Y is a hydrolyzable moiety; and

(4) one or more fluorochemical monofunctional compound; and

(b) a second component comprising one or more hydrophilic auxiliary compounds capable of further improving the oil- and/or water repellency or soil/stain release properties of a fibrous substrate treated with the fluorochemical urethane compounds.

2. The chemical composition of claim 1 wherein the polyfunctional isocyanate compound of said first component is a diisocyanate or triisocyanate.

3. The chemical composition of claim 1 wherein the fluorochemical monofunctional compound of said first component is of the formula:



wherein:

R_f is a perfluoroalkyl group or a perfluoroheteroalkyl group;

Z is a connecting group selected from a covalent bond, a sulfonamido group, a carboxamido group, a carboxyl group, or a sulfonyl group; and

5 R^2 is a divalent straight or branched chain alkylene, cycloalkylene, or heteroalkylene group of 1 to 14 carbon atoms; and

X is $-NH_2$; $-SH$; $-OH$; $-N=C=O$; or $-NRH$ where R is selected from the group consisting of phenyl, straight and branched aliphatic, alicyclic, and aliphatic ester groups; R^1 is an alkylene, heteroalkylene, aralkylene, or heteroaralkylene group.

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4. The chemical composition of claim 3 wherein R_f is a perfluoroalkyl group of 2 to 12 carbons.

15 5. The chemical composition of claim 3 wherein R_f is a perfluoroalkyl group of 3 to 5 carbons.

6. The composition of claim 1 wherein said first component polyoxyalkylene compounds are homo- and copolymers of polyoxyethylene and polyoxypropylene.

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7. The composition of claim 1 wherein said second auxiliary component is the reaction product of a polyisocyanate, a blocking agent and a polyoxyalkylene compound.

25 8. The composition of claim 7 wherein said isocyanate groups of said second component polyisocyanate are blocked isocyanate groups.

9. The composition of claim 8 wherein said blocked isocyanate groups are prepared by a thermally reversible reaction with phenols, lactams, and oximes.

30 10. The composition of claim 7 wherein said polyoxyalkylene compounds of said second component are homo- and copolymers of polyoxyethylene, polyoxypropylene, polyoxytetramethylene.

11. The composition of claim 1 wherein the amount of said hydrophilic polyoxyalkylene compounds of said first component is sufficient to react with between 0.1 and 30 % of available isocyanate groups, the amount of said silane compounds is
5 sufficient to react with between 0.1 and 25 % of available isocyanate groups, and the amount of said fluorochemical monofunctional compounds is sufficient to react with between 60 and 90 % of available isocyanate groups of said urethane compounds.

12. The composition of claim 1 wherein the amount of said polyoxyalkylene
10 compound of said second component is such that from about 25 to about 75 % of the available isocyanate groups of said auxiliary compound are reacted.

13. The composition of claim 12 wherein the unreacted isocyanate groups are blocked
15 isocyanate groups.

14. The composition of claim 1 wherein the ratio of said first component urethane
compound to said second auxiliary compound is from 12:1 to 1:12.

15. The composition of claim 1 wherein the ratio of said first component urethane
20 compound to said second auxiliary compound is from 3:1 to 6:1.

16. The composition of claim 1 wherein said polyoxyalkylene compound of said first
component has a functionality of greater than 1.

25 17. The composition of claim 7 wherein said polyoxyalkylene compound of said second component has a functionality of one.

18. A treatment composition comprising a solution of the chemical composition of
claim 1 and a solvent.

30 19. The treatment composition of claim 18 wherein the solvent is selected from the group consisting of water, an organic solvent, and mixtures thereof.

20. The treatment composition of claim 18 comprising from about 0.1 to about 50 percent chemical composition.
- 5 21. An article comprising a substrate having a cured coating derived from at least one solvent and a chemical composition of claim 1.
22. The article of claim 21 wherein said substrate is a fibrous substrate.
- 10 23. A method for imparting stain-release characteristics to a substrate comprising the steps of applying the treatment composition of claim 1, and allowing the coating composition to cure.
24. The method of claim 23 wherein said substrate is a fibrous substrate
- 15 25. The method of claim 24 wherein said coating composition is applied in an amount sufficient to provide between 0.05% and 5% solids on fiber.
26. The method of claim 24 wherein said composition is cured at ambient temperature.
- 20 27. A method for imparting stain-release characteristics to a fibrous substrate comprising the steps of:
- (a) applying a coating composition of claim 13, and.
- (b) curing the coating composition at elevated temperature to deblock said
- 25 blocked isocyanate groups.